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EMAS Environmental Statement 2015
Results 2014

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1 Glossary

	Dutch	English
ANVS	Autoriteit Nucleaire Veiligheid en Stralingsbescherming	Department of Nuclear Safety, Security and Safeguards
BHV	Bedrijfshulpverlening	In-company Emergency Response Team
BSI	British Standards Institute	British Standards Institute
CPR	Commissie voor de Preventie van Rampen door gevaarlijke stoffen	Committee for the prevention of disasters by hazardous substances
ECN	Energieonderzoek Centrum Nederland	Energy Research Centre of the Netherlands
EMAS	Eco-Management and Audit Systeem	Eco-Management and Audit Scheme
EMS	MilieuManagement Systeem	Environmental Management System
EPBD	Europese richtlijn energiepresentatie gebouwen	Energy Performance of Buildings Directive
EPC	Energieprestatiecertificaat	Energy Performance Certificate
GHG	Broeikasgassen	Greenhouse gases
GHS	Globally Harmonized System (*of Classification and Labeling of Chemicals)*	Globally Harmonized System (*of Classification and Labeling of Chemicals)*
HFR	Hoge Flux Reactor	High Flux Reactor
HSC	Commissie voor Veiligheid, Gezondheid en Milieu	Health and Safety Committee
IET	Instituut voor Energie en Transport	Institute for Energy and Transport
IenM	Ministerie van Infrastructuur en Milieu	Ministry of Infrastructure and Environment
INO	Intern Noodplan Onderzoek Locatie Petten	Internal Emergency Plan Research Site Petten
ISO	Internationale Organisatie voor Standaardisatie	International Organisation for Standardization
JRC	Gemeenschappelijk Centrum voor Onderzoek (GCO)	Joint Research Centre
KPI	Hoofdindicatoren	Key Performance Indicators
NRG	Nuclear Research and consultancy Group	Nuclear Research and consultancy Group
OHSAS	Handleiding voor het opzetten van een ARBO-managementsysteem (vrij vertaald)	Occupational Health and Safety Assessment Series
R&D	Onderzoek & Ontwikkeling	Research & Development
RSC	Reactor Veiligheidscommissie	Reactor Safety Committee
SCBA	Ademhalingstoestel	Self-contained breathing apparatus
SES	Veiligheid, Milieu en Beveiliging (Sector)	Safety, Environment and Security (Sector)
SSO	Veiligheidsverantwoordelijke	Site Safety Officer
VOC	Vluchtige Organische Stoffen	Volatile Organic Compounds
Wabo	Wet algemene bepalingen omgevingsrecht	Environmental Licensing (General Provisions) Bill
Ww	Waterwet	Water act

2 Introduction

This is JRC-Petten EMAS Environmental statement 2015, with the results 2014.
With EMAS - 'Eco Management and Audit Scheme' – the companies, who participate on a voluntary basis, target the enhancement of environmental performance by way of continuous improvement. In this sense, the yearly EMAS Statement is much like an annual report on environmental issues. It describes the current state of affairs, new developments and success or failure in achieving targets with respect to all environmental activities by JRC-Petten in the calendar year of 2014.
The statement is annually prepared by the Safety, Environment & Security (SES) department of JRC-Petten, in cooperation with other local departments. The statement has been verified by AENOR.

3 Executive Summary

JRC-Petten conducts scientific and technical activities in the domains of energy technology, renewable energy, energy efficiency, security of energy supply and nuclear reactor safety, some of which require experimental facilities and laboratories.
The JRC-Petten site uses a certified system environmental management (ISO14001:2004), which assures compliance with requirements in terms of licenses and regulations, legislation and charters through operational control of environmental issues.
Based on the results of the environmental analysis JRC Petten is taking measures to prevent pollution and to achieve more efficient use of natural resources (mainly energy, water and paper). This is achieved by environmental objectives, KPIs and actions to improve the environmental performance. The results are shown in the tables in the next chapters.
The consumption of energy, water and other resources can vary significantly from year to year according to the choice of activities and experiments that are conducted in the laboratories.

4 Background

The research activities of the Institute are currently carried out under the 8th Framework Programme (2008 to 201..) of the Commission. The Framework Programme is the legal basis for the work of the JRC and thus also of the Institute for Energy and Transport. The Framework Programme outlines in general terms the main priorities for Research and Development (R&D) funded by the European Union. Nuclear R&D is approved by the European Council, whereas non-nuclear R&D is approved by a co-decision between the European Council and the European Parliament.
Within the current Framework Programme the activities of the Institute for Energy and Transport in Petten have not significantly changed with respect to the previous Framework Programme. However, there is an increase in the desk top type activity with the creation of a new unit in 2010 which deals with the area of Energy Security. This change has no impact on safety, health and environmental issues at the Institute.

Over the last couple of years environment, safety, health and well-being have received continuous attention and a high priority within the Commission and at the Institute for Energy and Transport. The Institute's Environmental Management System was implemented and first certified in 2004 according to ISO 14001. The development of a Safety Management System had been completed in 2008 to such an extent, that certification according to OHSAS standard 18001 was achieved in 2009.
Environmental and Safety Management are integrated into the overall Quality Management System of the JRC-IET.

With these management systems the IET is continuously striving to be a safer and more environmentally friendly workplace for everyone on site and living in its surroundings.
The units of the institute located in Ispra (Italy) are excluded from this report, since their safety, health and environment related activities are managed by the Ispra Site Management Directorate. Where 'Institute' or 'IET' is used in this report it refers solely to the JRC-Petten site.
The Safety, Environment and Security (SES) sector is part of the Site Management Unit and is advising the Director and Staff of IET regarding the regulations of occupational health and safety, radiation protection, environmental protection and is monitoring the compliance with the applicable regulations. These tasks are integrated into the Quality Management System.
The Head of the SES sector is responsible for monitoring legislation and is also the liaison officer with the Dutch authorities. He is in charge of communication of safety and environmental related issues towards the staff and management.
The Site Safety Officer manages the occupational incident register and organises accident investigations. He further coordinates safety and environmental training of staff, liaises with the fire brigade, and provides support to risk assessments as well as advises staff on a day-to-day basis. In addition, he supports the management in safety/environmental tours and can report directly to the Director.
Preventive maintenance of health-and-safety critical equipment (e.g. safety cupboards, hoisting equipment) is performed in close cooperation between the SES sector and the Infrastructure sector.
The Institute for Energy and Transport is committed to assess the environmental impact of past, current and planned IET activities, and to minimise the potential harmful effects of such activities where reasonably possible. In order to achieve this and to fulfil legal obligations, an Environmental Management System (EMS) has been set up according to ISO 14001. It has been implemented and certified in 2004 and has been evolving ever since. In 2008 several improvements have been made to the system. The site environmental licence requires a certified environmental management system conforming to ISO 14001.
The certification was granted by TNO Certification in 2007. The certificate was recognized by BSI in 2010 after an external audit.

5 EMAS

EMAS stands for 'Eco-Management and Audit Scheme' and is a voluntary scheme for organisations willing to commit themselves to evaluate and improve their environmental performance. Following a pilot study started in 2001, the Commission decided in 2009 to extend this environmental management system to all its activities and buildings in Brussels and Luxembourg as described in Commission Decision C(2009) 6873.
The JRC has stated that it will take into account the Commission-wide policy towards EMAS, starting with ISO 14001 certification for all sites.

The Institute for Energy and Transport has been ISO 14001 certified since 2004 and has been registered for EMAS since 2013.

6 SITE ACTIVITIES AND PERFORMANCE

JRC-Petten (hereafter referred to as IET) conducts scientific and technical activities in the domains of energy technology, renewable energy, energy efficiency, security of energy supply and nuclear reactor safety, some of which require experimental facilities and laboratories.

Figure 1: Research Campus Petten - North Holland, with the Joint Research Centre located in the north part of the campus.

The JRC in Petten is located in an extensive dune area south of Callantsoog that extends to Petten ("Zwanenwater en Pettemerduinen"). The northern part of this area is an almost untouched landscape of predominantly calcareous dunes with damp and swampy valleys including some large dune lakes.

The JRC is located right in the middle of one of those areas; about 12 ha (40%) of the JRC terrain has since 2013 been designated as NATURA 2000 area. JRC is currently in dialogue with the Province of Noord-Holland for the realisation of Management Plan, in order to ensure that the existing rights and obligation of the JRC site are respected alongside with the conservation objectives. The existing requirements are stipulated in the environmental license which already meets the highest level of environmental protection.

6.1 Overview of core indicators at Petten since 2005

IET has been collecting site data on core indicators since 2010 and the variation in some of the main indicators is shown in Table C1.

Table C1: Percentage changes in certain core indicators at JRC Petten since 2010

Parameter	From: 2010 Overall	To: 2014 % per year	From: 2011 Overall	To: 2014 % per year	From: 2013 %	Target 2014 %
Energy bldgs (KWh/p)	-35,9	-8,99	-17,6	-5,9	-24,6	-1,00
Energy bldgs (KWh/m^2)	-26,3	-6,58	-3,9	-1,3	-20,5	-1,00
Water use (l/p)	-3,2	-0,80	-60,9	-20,3	-42,2	0,00
Water use (l/m^2)	11,3	2,82	-54,4	-18,1	-39,0	0,00
Office paper (kg/person)	-60,4	-15,09	-20,9	-7,0	-20,2	-1,00
Office paper (Shts/person/da	-60,4	-15,09	-20,9	-7,0	-20,2	-1,00
CO_2 bldgs (kg/p)	-32,4	-8,11	-18,7	-6,2	-17,0	0,00
CO_2 bldgs (kg/m^2)	-22,3	-5,58	-5,3	-1,8	-12,4	0,00
Non haz.waste (kg/p)	23,5	5,87	-19,3	-6,4	-22,7	-1,00

All 2010 core indicators showed very good progress compared with 2014. This tendency towards a smaller ecological footprint is significant, but is due to a lack of energy intensive research programs. The energy efficiency of our buildings is increasing and awareness is growing. Plans to further improve building energy efficiency have been made and should result in further decreases in energy usage. Therefore financial support should prioritise future energy efficiency improvement plans.

6.2 Description of JRC IET activities and setting

The site is continuously adapting to changes to meet future needs. Current core competences are in the domains of energy technology, renewable energy, energy efficiency, security of energy supply and nuclear reactor safety. IET has research laboratories for the testing, characterisation and analysis of different products, components, materials and processes. As a reference laboratory, IET is also validating several types of testing methods.

One of IET's important activities is the training of EU Member State and candidate country scientists. The IET disseminates scientific results by organising scientific events, participating in conferences and workshops and by writing articles for publication in scientific journals. Through research networks, the results are disseminated to national authorities and research centres, industry, and other interest groups. Furthermore, the Institute represents the EC in several energy issue-related committees. Information on the research projects' objectives and results is available on the internet pages of the Commission, JRC and IET.

The site location and layout of buildings is presented below in Figure C1.

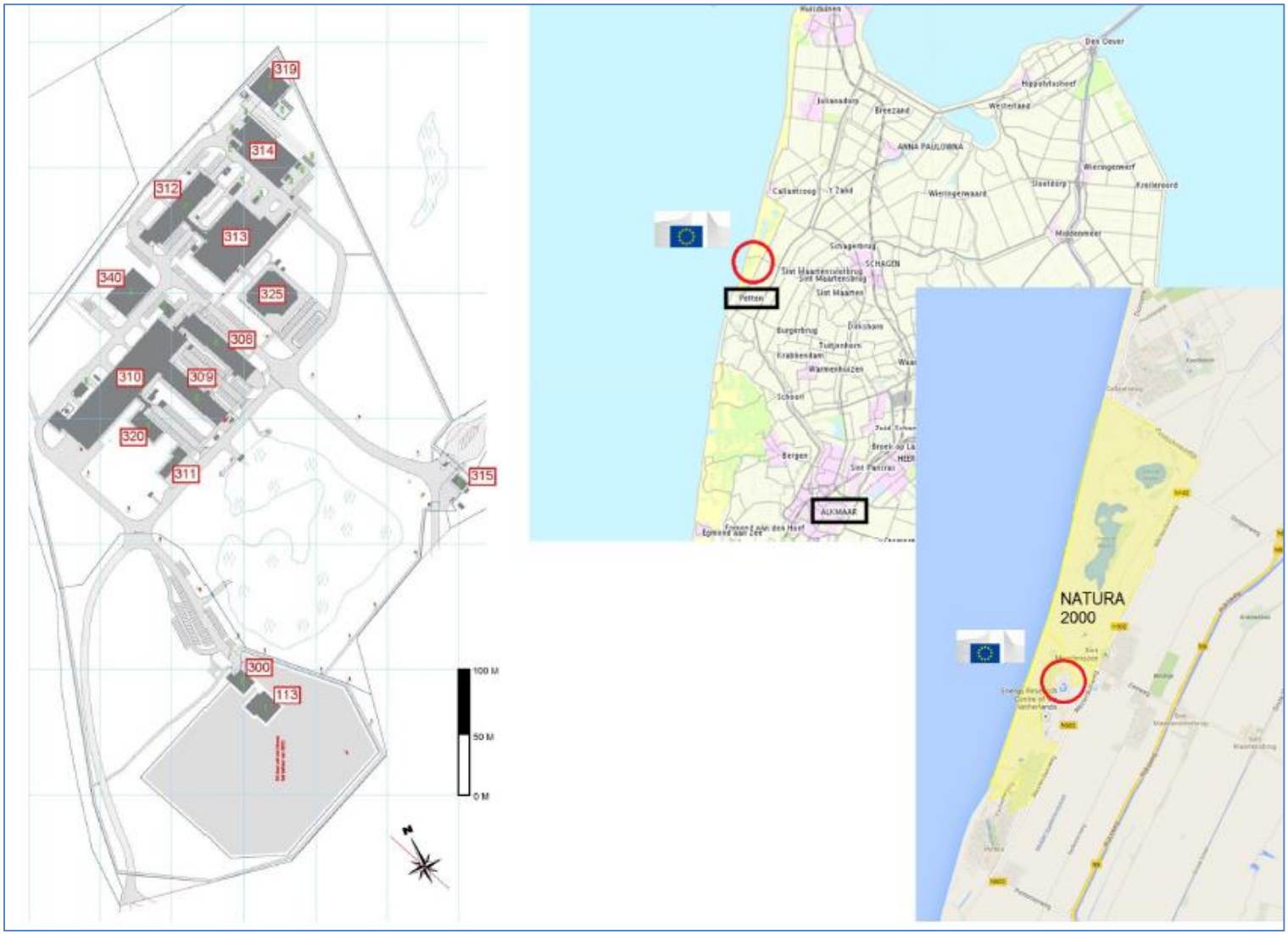


Figure C1: JRC IET: Site location and layout

The EC owns the High Flux Reactor (HFR) located at the site. However it is operated by Dutch company NRG which also holds the operational licence and consequently is outside the EMAS scope. Buildings 113 (the radiographic laboratory), the process of transferring building 113 under the license to NRG is still ongoing. For 2015 we hope to transfer the license and building to NRG. A description of the buildings is presented below:

Building(s)	Description (and/or status)
308, 309	Office buildings
310	Large experimental hall
312, 325	Office building with some smaller laboratories
313	Offices, central store, mechanical workshop, storage, library, gym
314/319	Office, laboratory, workshop
320	Offices
300	Security, entrance to HFR, operated by the Dutch company NRG, located on HFR
315	Security
340	Storage (maintenance, cars, workshop)
113	Laboratory, to be transferred to NRG, located on the HFR site

6.3 Environmental impact of JRC IET activities

The results of the analysis of environmental aspects at IET are summarised in the table below, which is reviewed and updated every year.

Table C2 – Summary of significant environmental aspects for the IET site

Aspect Group	Environmental Aspect	Environmen-tal Impact	Location/Activity/Product/Service
Air, Energy (gas, electricity, fuel)	Emission of gases (argon, carbon monoxide, etc.)	Pollution of the air, climate change, exploitation/ depletion of natural sources	FCTEST (fuel cell testing)
	Emissions of combustion gases (CO2 and NOx)		General, Hydrogen Production, Transport and mobility (missions, commuting, service cars)
	Emissions of testing gases		HySaST SolTeF (Hydrogen Safety for Storage and Transport, SolTef-laboratory). AMALIA lab (Ageing of Materials under the effect of environmentally assisted stress corrosion cracking).
	Welding (smoke), emission of aerosols to the air (VOC, volatile organic compounds)		Assembly Room, workshop
	Cleaning chemicals, emissions of solvents to the air (VOC)		Workshop
	Energy for building heating, climate control, steam generator, machines, household utilities, lightning etc.		General
	Energy saving measurements taken into account for putting up new buildings or rebuilding existing buildings		Infrastructure
	Energy consuming hardware: purchase of materials, equipment and machines		IT-service, Infrastructure
	Geothermal cooling, use of groundwater for cooling process with Fuel cell testing	Warming of groundwater	FCTEST
	H(C)FC emissions	Destruction of the ozone layer	Climate control buildings
External	Hydrogen in production/testing facilities,	Disturbing /	FCTEST, HySaST SolTeF, Hydrogen

Aspect Group	Environmental Aspect	Environmen-tal Impact	Location/Activity/Product/Service
Safety (hydrogen, storage dangerous substances, pressure, radiation)	adequate ventilation and gas detection equipment	pollution of living environment. Health risks.	Production
	Storage of hazardous substances		Micro Structured Analysis (MAS), Sample Preparation, Central Store
	Use and storage of gas bottles and (high) pressure equipment		FCTEST, AMALIA lab, Assembly Room, Workshop, HySaST SolTeF
	Radioactive material		Assembly Room, Commissioning area
Local aspects	Noise, dust (PM), soil (prevention and history)	Noise, air and soil pollution, health risks	FCTEST, Hydrogen Production, HySaST SolTeF, Laboratory , grinding room, workshop
Waste	Various waste (e.g. packaging material, paper and cardboard, metals)	Exploitation of renewable materials, producing waste	General
Waste (chemical, dangerous)	Chemical Waste, 'Klein Chemisch Afval' (e.g. batteries), scrap from material used, hazardous waste mainly from Metallography, TEM and SEM		Grinding room, Wire-erosion, HySaST SolTeF, MAS, Sample Preparation, Central Store
Waste water	Waste water (housekeeping: cleaning, sanitation and installations)	Risk of eutrophicatio n, pollution of water	General
	Salted water, production of deionized water by reversed osmoses		FCTEST, Hydrogen Production
	Cleaning / rinsing water, cleaning of testing materials and equipment		Micro Structured Analysis (MAS)
	Heavy metals, waste water contains heavy metals due to grinding		Grinding room, wire-erosion
Water (use of)	Water for Sanitation and installations, water consumption	Drying of ground, waste water	General
Bio - diversity	Choice of ingredients and their origin	Weakening of ecosystems	Research and process/activities on site
	Site selection and type of buildings	Destruction of the natural habitat of the relief. Visual pollution	The (real estate/environmental) policy of the EC and JRC IET site
Resources	Fossil fuel consumption (heating, cooling, ventilation, electrical equipment and transportation)	Decrease in natural resources	General
	Use of paper (office, printing, communication needs)		
	Water consumption (health and technical equipment. i.e. Geothermal installation)		
Procureme nt, funding (indirect)	Indirect environmental aspects of programs to finance. Environmental performance of contractors. Sustainability and impacts of products and services selected.	Impacts on the environment caused by third parties, products and in the 'chain'	'Sustainable' purchasing: taking account of the environment in the selection and evaluation of projects. Integration of environmental clauses in contracts.

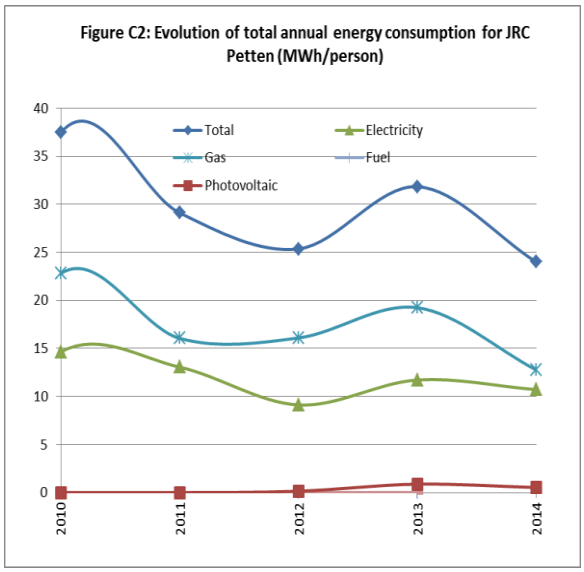
The results of the environmental analysis show that the environmental aspects in the table above are significant. IET is taking measures to prevent pollution and to achieve more efficient use of natural resources (mainly energy, water and paper). A majority of the impacts are followed through the monitoring of indicators.

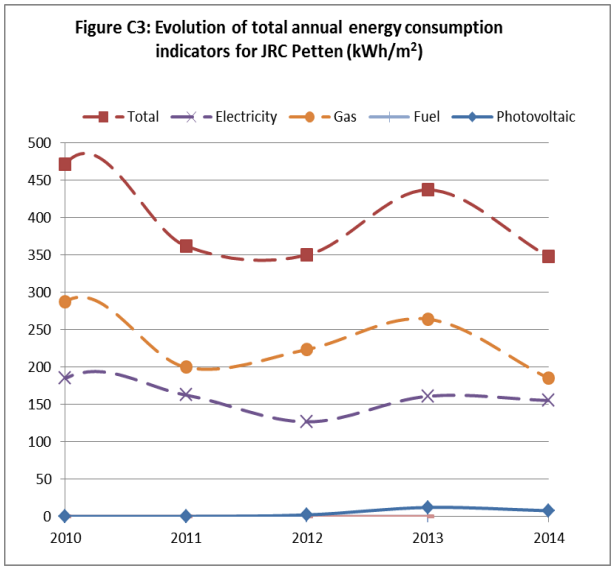
6.4 More efficient use of natural resources

6.4.1 Energy consumption

a) Buildings

Because IET is a scientific site the consumption of energy and water depends to a significant extent on laboratory activities. Energy-intensive experiments in one year may be followed by less energy-demanding experiments in the following year. This can result into sharp increases or decreases from year to year. Currently no distinction is made between energy and water consumption in offices and in laboratories.





Figures C2 and C3 illustrate that total energy consumption for buildings (indicator 1a) fell considerably between 2010 to 2014. In 2013 it increased by approximately 20% per person and per square metre as a result of an unusually cold period from January to May 2013. 2014 was a very warm year and there were no energy-intensive research projects. Overall there were a significantly larger number of hot degree days in 2014 as discussed in Section 2.4.

This year we report the measured value of on-site generated PV energy rather than the estimated value which had shown us too positive a picture. In 2015 we plan to install more solar panels and we expect, on sunny days in the spring and summer, to have some energy independent buildings.

The **2014 target** to maintain 2013 levels was met. Initiatives for continued improvement identified in the Commission's EMAS annual action plan for 2015 are summarised below.

Annual action plan no	**Since**	**Description (and reference)**	**Progress in 2015**	**Expectations in 2015, and end date (if app)**
12	2015	Photovoltaic installation at JRC IET. Installation of photovoltaic panels on the roof of building 309, 308 - 61Kwp.	Started, Installation of 61Kwp	Installation of 61Kwp to be complete in 2015

Annual action plan no	Since	Description (and reference)	Progress in 2015	Expectations in 2015, and end date (if app)
94	2015	Insulation of outside walls and roof building; 310 and ,314	Started	To be complete in 2015 builings 313 and 320 also insulated

b) Site vehicles

IET has a fleet of one diesel, three petrol and one electrical vehicle. The total energy consumption for vehicles (new indicator 1b) was equivalent to 23 kWh/person, approxiamtely 0.001 % of that for buildings. The **2014 target** was to reduce fleet consumption by 2% which was met.

c) Renewable energy use in buildings and vehicles

The **2014** onsite genegration of renewable energy as part of total energy (indicator 1c) was 2.18% of total energy consumption. This onsite generated energy is done with photovoltaic cells installed onsite. The **2014 target** was 2.3% based on estimations. Due to improved reporting(since 2013 actual measuring of PV generated energy) the numbers show less progress as assumed. The total onsite generated renewable energy was 147.598,0 kWh. For 2015 we expect to see an increase in solar generated energy due to the installation off 61kWhp solar panels on the buildings 308 and 309.

6.4.2 Water consumption (indicator 1d)

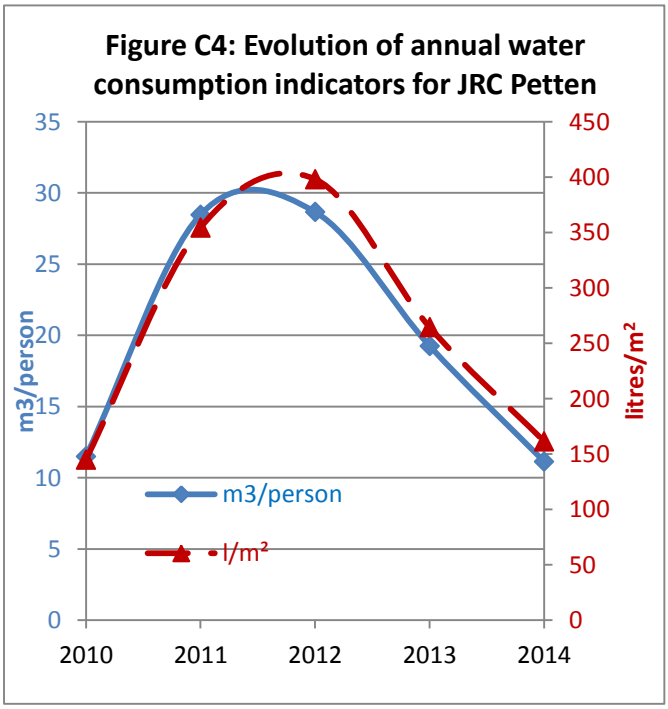


Figure C4 illustrates that water consumption after increasing in 2011, has reduced in 2013. The peak observed in 2011 and 2012 was due to faulty valve control in the water treatment plant of the Fuel cell laboratory in building 310. The Fuel cell laboratory required less water in 2014 leading to lower overall water consumption than in the three previous years. Site water consumption is strongly influenced by activities in building 310, where it is used as process water in technical installations.

The **2014 target** was not to exceed the 2013 consumption levels was easily achieved with an actual reduction of 35.5%. The **2015 target** is to not exceed 2014 levels.

6.4.3 Office paper (indicators 1e)

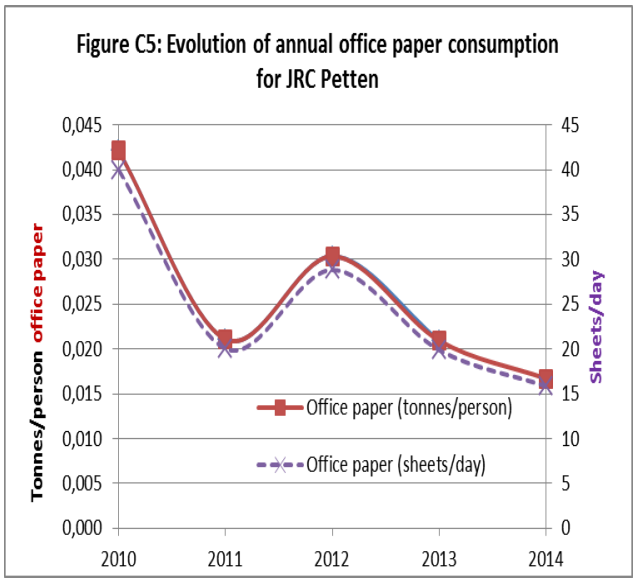


Figure C5 shows that paper consumption has reduced considerably since 2010, with the 2013 value representing only 50% of the initial figure. The apparent peak in 2012 may not be real, as paper is purchased infrequently and in large quantities.

The **2014 target** of reducing office paper consumption by 1% was met with an actual reduction of 20%, although as mentioned above this may be due to purchasing patterns rather than those of usage. The **2015 target** is not to exceed the 2014 level of consumption.

The following initiative was identified in a management approved action to more accurately determine paper consumption:

Annual action plan no	Since	Description (and reference)	Progress in 2014	Expectations in 2015, and end date
16	2013	Implement a plan to more accurately measure paper inventory	Started	To finish in 2015

6.5 Reducing emissions of CO_2, other greenhouse gases and air pollutants

6.5.1 CO_2 emissions from buildings

The following table shows the breakdown of CO_2 emissions by source. These are mainly the result of the reduction of buildings emissions. Refrigerants losses and vehicles emissions, expressed as CO_2 equivalent, are minor in relation, accounting for less than 1% of buildings emissions.

Table C3: Percentage of CO_2 emissions from different sources in 2014 (tonnes/person)

Source	Quantity	% of total
Buildings (EMAS)	9,79	99,52
Refrigerants loss	0,042	0,43
Vehicles, all Commission	0,005	0,05
Missions (excluding vehicles)		0,00
Total	**9,84**	**100,00**

a) Buildings (energy consumption)

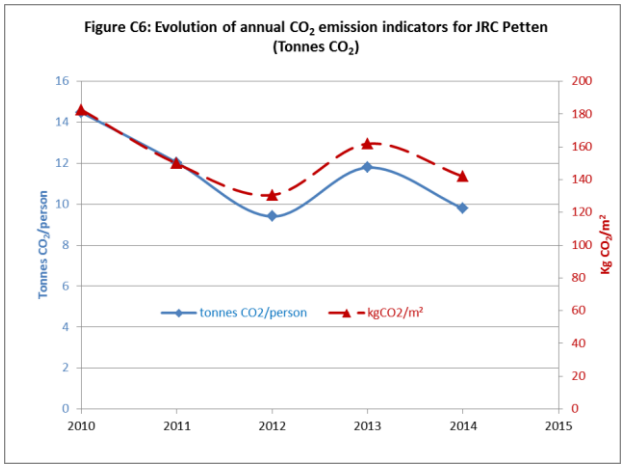


Figure C6 illustrates that CO_2 emissions have reduced since 2010; the 2014 per capita value representing 81% of the initial figure. This is in line with the reduction in energy consumption and therefore to be expected.

The **2014 target** of a 1% reduction in CO_2 emissions was met with an actual decrease of 17% /person, mostly due to decreased gas and electricity use in the cold period from January to May 2014. The **2015 target** is to maintain the 2014 level of emissions.

b) Buildings other greenhouse gases (refrigerants)

The **2014 target** under the IET environmental plan was to reduce GHG emissions by 1%, and this was not achieved. The **2015 objective** is for these emissions not to exceed the 2014 levels. The following action identified in the Commission's 2015 EMAS action plan is as follows:

Annual action plan no	Since	Description	Progress in 2014	Expectations in 2014, and end date
33	2014	Phase out all the R22 containing air conditioning units located within the institute before 2014	Finished	To finish in 2014

Under this (and previous action plans) the number of equipment units to phase out was as follows:

Table C4: Phase out of equipment (with HCFC, R22), number of units left at end of year

	2010	2011	2012	2013	2014
Total	15	10	7	4	0

6.5.2 CO_2 emissions from vehicles

a) JRC IET vehicle fleet

The **2014 target** of reducing emissions from its five vehicles by 1% was met. The actual reduction in CO2 emission per kilometer is 9.6%. The main reason for the reduced emissions is the switch from a petrol vehicle to an electrical vehicle. This electric vehicle is used for post item transport and short trips on the campus.

b) Missions (excluding Commission vehicle fleet)

There were no specific targets in 2014 or 2015 or management approved action plans to reduce CO_2 emissions from missions.

c) Commuting (and mobility)

There were no specific IET targets in 2014 or management approved action plans to reduce CO_2 emissions from commuting.

6.5.3 Total air emissions of other air pollutants ($S0_2$, NO_2, PM, VOC)

The **2014 target** was to reduce atmospheric emissions of SO_2, NO_x and PM expressed in kg/year by 1%. The **objective for 2015** is to not exceed the 2014 emissions levels. Both PM10 and SO_2 were below the limit of detection in 2014, in common with 2013. VOC emissions were 50 kg in 2014, up from 21 kg in 2013 due to expanded use of solvents.

NOx emissions from heating installations were 564 kg in 2014 compared with 779 kg in 2013. This represented a 28% decrease due to lower gas consumption of heating installations during the cold period lasting from January to May 2014. The NOx emission factors of the gas heating equipment of buildings 310, and 320 are based on technical documentation and account for about 50% of total NOx emissions as was the case in 2012. The NOx emission factors of the gas heating equipment of all other buildings are based on NOx measurements. The logbooks record measured emissions as being within the legal limits.

For emissions to air of NO_x, PM, VOC and SO_2, there were no actions implemented in 2014 and no specific actions planned for 2015. The targeted reductions will be achieved through campaigns of general awareness reminding staff of the importance of reducing resource consumption.

6.6 Improving waste management and sorting

C6.6.1 Non hazardous waste

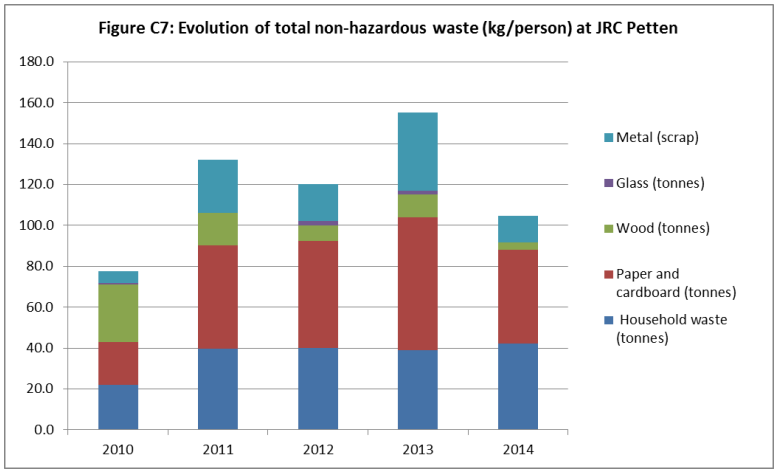


Figure C7 shows that household and paper/carton waste make up a large percentage of the waste and with quantities generated remaining almost stable over the last four years. There has been a greater than 20% increase in the total amount of general waste generated in each of the last four years compared with 2011.

This is due to the collection of large amounts of scrap (particularly in 2013), as several installations reached the end of their life span. Though some waste electrical equipment was gathered throughout the year, this was placed into temporary warehouse storage in 2014 this equipment is disposed.

The **2014 target** of a 1% reduction in total waste generation was met with an actual decrease of 23%. The **2015 target** is not to exceed the 2014 waste generation levels. There are no specific management approved **actions** for continued improvement.

6.6.2 Hazardous Waste

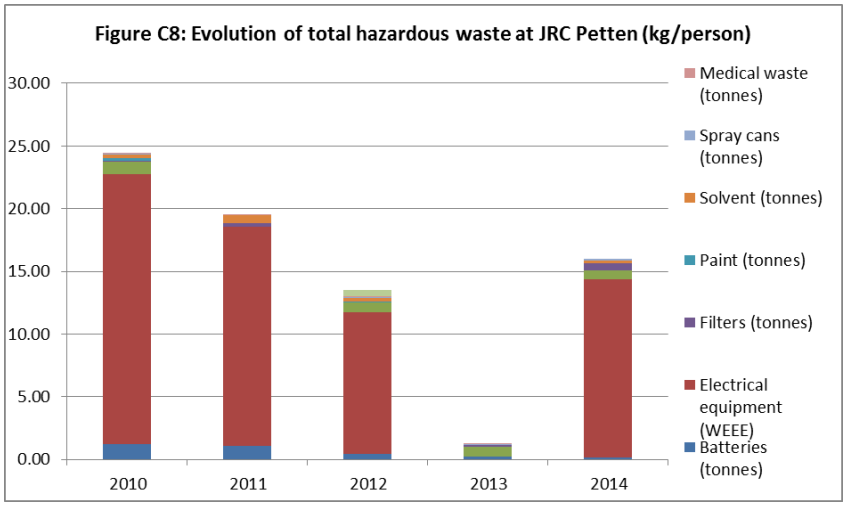


Figure C8 indicates total hazardous waste. The **2014 target** was to reduce 1% in hazardous waste, the increase was 139% in 2014. This increase is caused by the different way the category hazardous waste is composed. Electrical equipment is added to this category and has a great influence. The **2015 target** is to maintain the level of 2014.

6.6.3 Waste sorting

Table C5 shows that the proportion of total waste sorted, has declined from 76.1% in 2013 to 65.5% in 2014.

Table C5: Percentage of waste sorted at JRC Petten

	2010	2011	2012	2013	2014
Percentage of waste sorted	72.9	71.2	67.5	76.1	65.5

This decline is the result of a reduction in the overall amount of waste generated throughout the year, mainly owing to reduced research activities. The proportion of household or "unsorted" waste is therefore larger in 2014. The quantity "unsorted" or household waste was only slightly higher in 2014 than in 2013. There was no specific **2014 target** for sorting waste, and the **2015 target** is to achieve the 2014 level of performance.

a) Discharges to wastewater

IET discharges wastewater under its Environmental Permit and is required to undertake sampling on a regular basis, results of which are shown in Table C6.

Table C6 Control of discharges to wastewater		Concentration (mg/m3) Inorganic emissions to the sewer system			
Substance	Limit mg/m3				
		2011	**2012**	**2013**	**2014**
Chloride (Cl-)	-	200	170	210	200
Evolution %		-23.1	-15	24	-5
Release of heavy metals to the sewer system	**0**				
Mercury (Hg) - Limit 10mg/m3	10	0.14	<0.1	<0.1	<0,1
Δ %		0	0	0	0
Cadmium (Cd) - Limit 20mg/m3	20	<0,4	0.71	<0.4	<0,4
Δ %	0	0	0	0	0
Zinc (Zn)		140	300	300	120
Δ %		-22	114	0	-60
Copper (Cu)		220	130	160	180
Δ %		16	-41	23	12,5
Nickel (Ni)		<5,0	11	5	<5
Δ %	The sum of 5 metals: 5,000	0	0	-55	0
Chromium (Cr)		6.3	5	5	5,8
Δ %		-58	-21	0	16
Lead (Pb)		<5,0	14	5	<5
Δ %		0	0	-64	0
Arsenic (As)		<1,5	1.7	1.5	1,5
Δ %		0	0	-12	0
Metals: the sum of the 5 highest values - 5000 mg/m3	0	366	462	475	315,8
Δ %		-8	26	3	-34

*Exceeding the legal limit as a result of building 113. Corrective actions have been taken.

**collected in separate tanks and emptied by an external certified company, in m3

***Equals the consumption of water plus the water FCTEST facility (489 m3), minus water collected from chemical laboratories in 312

The data indicate that concentrations in wastewater are below license limits. Therefore IET demonstrates that IET complies with the license requirements (which form a part of the environmental licence). Although the wastewater permit requires sampling once per year, in order to establish a more complete data series and to be able to evaluate and react more quickly IET carries out extra measurements twice per year. These extra measurements are in designated sampling pits witch are located in areas where contamination is possible due the activity's carried out (labs and workshop).

6.7 Protecting biodiversity

The constructed area of buildings (footprint at ground level) in IET is 19 458 m^2, equivalent to 69 m^2 for each staff member. The total area of the site is 305 554 m^2, so the "natural" proportion of the site represents approximately 97% of the total.

There was no specific **2014 target** in relation to biodiversity at the IET site: the objective in 2012 was to report on the Natura 2000 site in the Environmental Statement. The **2015 target** is to develop a Natura 2000 Control Plan with the Dutch authorities according to the following management approved action as indicated in the Commission's EMAS annual action plan.

Annual action plan no	Since	Description (and reference)	Progress in 2014	Expectations in 2015, and end date
52	2014	Development and implementation of a NATURA 2000 Control Plan with the Dutch authorities	The devolpment of the natura 2000 plan is postponed by the province	Discussion and update on the nitrogen deposition issue

6.8 Green Public Procurement

6.8.1 Incorporating GPP into procurement contracts

No specific actions have been undertaken in 2014 but environmental criteria have systematically been considered when defining selection and award criteria, mandatory technical requirements, etc. for every relevant tender procedure. The **2015 target** will be to apply GPP measures developed for the EC and all JRC activities as identified in the following management approved action:

Annual action plan no	Since	Description (and reference)	Progress in 2014	Expectations in 2015, and end date
56	2014	Green Public Procurement will be developed for the EC and all JRC activities. JRC IET will implement the GPP procedure when ready.	NA	Systematic implementation

6.8.2 Office supplies contract

There was no specific **2014 target** and no 2015 target for the number of "green" products in the office supply catalogue.

6.9 Demonstrating legal compliance

6.9.1 Prevention and risk management

IET conducts active risk and compliance control on analysis, verification planning, execution, registration and carries out a yearly task oriented full review of all legal requirements. The

result is an overview of KPIs, results, effects and the status of compliance along with an appreciation of what is and isn't working well. Employee involvement is important, and several instruments are used including:

- Register of (legal) requirements and obligations;
- Annual licence compliance checks (self-assessments);
- Overview legal maintenance and inspections;
- Assurance matrix (implementation in 2014);
- Safety and Environmental Unit Tours (inspection by Unit Head and Site Safety Officer);
- Inspection, by site fire brigade, of the facilities for fire prevention, detection and of fire fighting equipment;
- Internal and external audits; and
- EMAS overview of accountability (checking that the quantitative and qualitative presented data and information in the EMAS Environmental Statement is correct).

6.9.2 Maintaining the site's EMAS registration

The **2014 target** was re-certification of the existing ISO 14001 and EMAS verification for the second time, both of which were achieved. The 2015 target is to maintain the EMAS certification for the entire site. The following actions were included in the Commission's EMAS Annual Actoin Plan for 52015..

Annual action plan no	**Since**	**Description (and reference)**	**Progress in 2014**	**Expectations in 2015, and end date**
62	2013	Revision of the site's environmental license	Ongoing	finished
63	2013	Development and implementation of an overview of all legal requirements and other obligations, and translation of the legal requirements/obligations towards assurance measurements and implement it in the organization.	Finished	Continue to update in 2015
New*	2013/14	Environmental tours: include environmental aspects in the safety and environmental tours	finished	Continue to mention environmental aspects during safety tours in 2015
New*	2013/14	Environmental programme 2015-17: review the achievement of the environmental programme 2012-14 and prepare of the new 3 year programme (2015-17).	finished	Continue in 2014

* Inserted after the Commission's 2015 EMAS annual action plan was validated by the Steering Committee.

6.9.3 Compliance with EMAS

The number of (minor) non-conformities generated through EMAS external verifications reduced to one in 2014. IET monitors the findings of EMAS internal audits and verification audits, and in cooperation with HR COORD ensures that non conformities as well as "scopes for improvement" are followed up.

6.10 Internal communication (and training)

6.10.1 Internal communication

There have been several internal communication actions including an EMAS newsletter to all staff in JRC-IET, presentation of EMAS system during Unit and Management meetings and EMAS poster campaigns in accordance with the corporate communication campaigns. During the safety tours specific environmental issues are discussed with heads of unit. The main topic of recent tours is how to reduce the percentage of pc stations that are active overnight and over the weekend. The percentages are provided by the IT department with a break down by unit and provide good input for discussion on behaviour.

6.10.2 Internal trainings

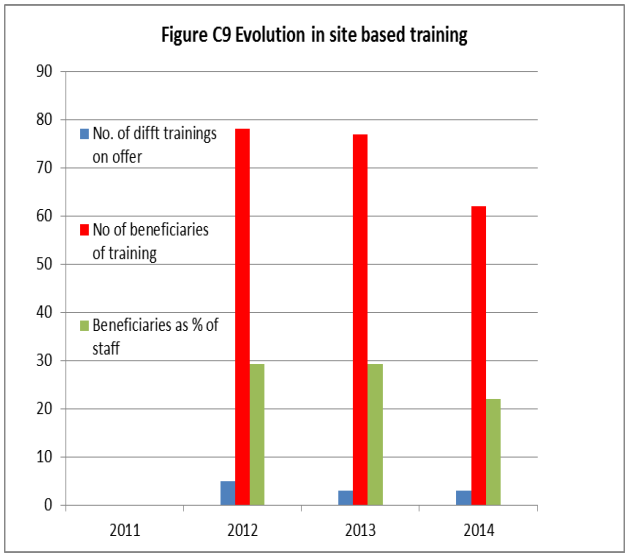


Figure C9 shows the evolution in site based training. There were specific awareness and training packages available in 2014, and the **2015 target** is to maintain these.

Regarding promoting awareness, in 2014, the SES (safety, environment, security) unit participated in one Management meeting, eight Unit meetings, eight newcomers' training sessions and four Health and Safety Committee meetings.

6.11 Transparent dialogue with external partners

IET enters into regular external communications, where environmental issues are on the agenda, including participating in meetings with the following stakeholders, contractors and suppliers as indicated in Table C7:

Table C7: Stakeholders, meeting purpose and frequency

Stakeholder	Purpose
Gemeente Schagen	in the context of the environmental permit (Omgevingsvergunning)
Provincie Noord-Holland,	in the context of groundwater en 'koude warmte opslag', Natura 2000
Hoogheemraadschap Hollands Noorderkwartier	in the context of wastewater pollution measurements and levy
AMART	wastewater pollution measurements 'afvalwaterputten'
GEA Grenco	Maintenance contractor for cooling equipment
Cofely	maintenance of heating and ventilation equipment
SITA/van Ganzewinkel	Waste contractor
GOM	Cleaning contractor
NUON	Energy supplier
ECN + PWN	Water supply

6.12 EMAS costs (and savings)

Table C8 indicates how costs have evolved for running EMAS and for expenditure on energy, water, paper consumption and waste disposal.

Table C8 EMAS costs (and savings)	Costs				Cost savings in 2014 compared to
	2010	2011	2013	2014	2013
Total Direct EMAS Cost (EUR)	0	0	66,000	66,000	0
Total Direct Cost per employee	0	0	251	234	17
Total buildings energy cost (Eur)	430,950	345,762	399,680	345,359	54,321
Total buildings energy cost (Eur/person)	1,858	1,510	1,520	1,225	295
Total fuel costs (vehicles) (Eur)	0	0	957	821	136
Total energy costs (Eur/person)	0	0	4	3	1
Total water costs (Eur)	5,338	13,040	10,130	6,282	6,758
Water (Eur/person)	23	57	39	22	16
Total paper cost (Eur)	15,632	7,731	8,805	7,531	1,274
Total paper cost (Eur/person)	67	34	33	27	7
Waste disposal (general) - unit cost/tonne	90	90	90	90	0
Waste disposal (general) - Eur/person	6.98	11.90	13.98	9.43	4.55
Waste disposal (hazardous) - unit cost/ton	750	750	750	750	0
Waste disposal (hazardous) - Eur/person	2.36	4.41	2.04	5.51	-3.48

Costs associated with running EMAS include consultancy contracts which are recorded since 2012. In 2014 these were equivalent to 234 EUR per person, little changed from 2013 due to a light increase in staff.

Energy expenditure in 2014 was 285 EUR less per person than in it had been in 2011. There had been a larger reduction in energy expenditure between 2010 and 2012 (over 500 EUR per person), but energy costs were significantly higher in 2013 when an additional 299 EUR per person was spent compared with the previous year. Vehicle fuel expenditure in 2014 was 1 EUR per person less than in 2013.

Water and paper costs were both lower in 2014 than they had been in 2013, with water costing 6 EUR less per person. Savings per employee for paper over the same period was greater, with paper cost per employee in 2013 being 40 EUR less than it had been in 2010, and 7 EUR less than in 2013.

Per capita costs for general waste disposal have declined to under 10 EUR, and remain far higher than those for hazardous waste disposal equivalent to approximately 6 EUR.

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